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EXAMINER	
DONADO, FRANK E	

ART UNIT	PAPER NUMBER
2617	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/591,370	ISHII ET AL.	
	Examiner	Art Unit	
	FRANK DONADO	2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 October 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *See Continuation Sheet* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,5-8,10-13,15-27,30-38,40-45,47-49,51,52,54-59,62-74,78,79 and 82-110* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Continuation of Disposition of Claims: Claims pending in the application are 1,5-8,10-13,15-27,30-38,40-45,47-49,51,52,54-59,62-74,78,79 and 82-110.

DETAILED ACTION

Response to Amendment

1. Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

Specification

2. The disclosure is objected to because of the following informalities:

In paragraphs 23, lines 4-6 and Paragraph 37, lines 2-4, **"...to switch a display method of position information depending on the accuracy of acquired terminal position information..."** should be changed to **"...to reacquire terminal position information depending on the accuracy of acquired terminal position information..."**, in accordance with paragraphs 253, 255, 276, 280-281, 302 and 307-308 in the specification. Appropriate correction is required.

In paragraph 50, lines 15-19, **"Preferably two receivers are attached to a moving body. Preferably the two receivers are attached to a moving body such that the directions in which the reception gains of the receivers become maximum are right and left, respectively"** should be changed to **Preferably two receivers are attached to two different moving bodies. Preferably the two receivers are attached to two different moving bodies such that the directions in which the reception gains of the receivers become maximum are right and left, respectively".** For further clarification, examiner has interpreted the cited paragraph and line numbers above to mean the positioning system can detect more than one

person moving in a variety of directions and has examined related claims accordingly.

Claim Objections

3. Claim 88 is objected to because of the following informalities: **"... in the case where the output current value is smaller than the threshold value, output of a DC power is stopped by the switching means, while in the case where the output current value is larger than the threshold value, a DC power is output by the switching means"** should be changed to **"... in the case where the output current value is larger than the threshold value, output of a DC power is stopped by the switching means, while in the case where the output current value is smaller than the threshold value, a DC power is output by the switching means"**, since the current must be limited when the output current value is larger than a threshold value, so as to limit/decrease said DC power being supplied to the transmission unit within said illumination device (claim 87), and vice-versa. Appropriate correction is required.

4. Claims 47 and 78 are objected to because of the following informalities: **"...to switch a display method of position information depending on the accuracy of acquired terminal position information..."** should be changed to **"...to reacquire terminal position information depending on the accuracy of acquired terminal position information..."**, in accordance with paragraphs 253, 255, 276, 280-281, 302 and 307-308 in the specification. Examiner has examined these claims accordingly. Appropriate correction is required.

5. Claims 93 and 98 are objected to because of the following informalities: The term/acronym **"PHS"** is not defined anywhere in the specification. Claims 93 and 98 state **"...the information transmission means utilizes a PHS, and the second positioning system is configured to identify the position of a PHS base station with which the terminal communicates, as the position of the terminal"**. Based on these claims and paragraphs 43, 45, 322, 324-326 and 355-364, examiner has interpreted PHS to provide the functionality of an external/outdoor positioning system and has examined these claims accordingly. Appropriate correction is required.

6. Claims 107 and 108 are objected to because of the following informalities: In claim 107, **"...two receivers are attached to the moving body"** should be changed to **"...two receivers are attached to two different moving bodies"**, and in claim 108, should be changed to **"...the two receivers are attached to said moving bodies such that the direction in which the reception gains of the receivers become maximum is right and left, respectively..."**. Examiner has examined these claims accordingly. Appropriate correction is required.

7. Claim 100 is objected to because of the following informalities: **"...a second terminal carried by the person"** should be changed to **"...a second terminal carried by a different person"**. Appropriate correction is required.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 78 and 79 are rejected under 35 U.S.C. 102(b) as being anticipated by Tallman, et al **(US Patent No. 6,175,308)**. From now on, Tallman, et al, will be referred to as Tallman.

Regarding claim 78, Tallman teaches a program embodied on a computer-readable medium encoded with computer executable instructions for an application server in a positioning system including an illumination device which transmits a signal including a unique information from a given installation position, a terminal which is communicably connected to the illumination device and extracts the unique information from the signal, and an application server realized by a computer connected in a communicable manner to the terminal and detecting the position of the terminal based on the unique information received by the terminal, the instructions comprising: an instruction to: display the position information of the detected terminal on a display device of the application server, an instruction to reacquire terminal position information depending on the accuracy of acquired terminal position information **(A local computer 280 external to a reader executes program for determining said location of said reader, displays said location information and reacquires said reader location information depending on the accuracy of acquired terminal position through a continual updating process that includes determining only the latest up-to-**

date/accurate information, Column 1, lines 11-18, Column 9, lines 4-13, 17-20 and 41-52, Column 3, lines 10-15 and Figure 9).

Regarding claim 79, Tallman teaches the program according to claim 78, wherein the instructions further comprise: an instruction to store attribute information concerning the terminal at the display device and an instruction to display on the display device the position information of terminal corresponding to a specified attribute information **(Said local computer 280 receives and stores current location of local transmitters and said identity of said reader. Said current location and the most recent/previously received location of local transmitters are displayed, along with an identity of a person corresponding to said reader, Column 1, lines 11-18, Column 9, lines 4-13, 17-20 and 41-52, Column 3, lines 10-15 and Figure 9)**.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

12. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

13. Claims 82-86 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tallman, et al **(US Patent No. 6,175,308)**, and further in view of Simons, et al **(US PG Publication 2006/0015503)**. From now on, Tallman, et al, will be referred to as Tallman, and Simons, et al, will be referred to as Simons.

Regarding claims 82 and 83, Tallman teaches he program according to claim 78, wherein the device is configured to display the terminal position information corresponding to a specified display condition **(Said display of latest up-to-date location information fulfills a display condition, Column 9, lines 4-13, 17-20 and 41-52)**. Tallman does not teach the instructions further comprise: an instruction to receive a position information request concerning a terminal user at an acquisition device, an instruction to identify the terminal that the user uses, an instruction to acquire

the position information of the identified terminal and in the case where a plurality of the user terminals exist, an instruction to select one terminal in order of priority set for the respective terminals to acquire the position information thereof, wherein the acquisition device is configured to determine the priority based on the type of the terminal. Simons teaches the instructions further comprise: an instruction to receive a position information request concerning a terminal user at an acquisition device, an instruction to identify the terminal that the user uses, an instruction to acquire the position information of the identified terminal and in the case where a plurality of the user terminals exist, an instruction to select one terminal in order of priority set for the respective terminals to acquire the position information thereof, wherein the acquisition device is configured to determine the priority based on the type of the terminal **(A request is made for said location information for a particular portable device when a plurality of said portable devices exist, and said location corresponding to said particular terminal is generated immediately, Paragraph 40, Paragraph 37, lines 1-3 and Figures 4 and 5)**. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Tallman to include this feature for the benefit of security.

Regarding claim 84, Tallman, in view of Simons, teaches the program according to claim 82. Simons further teaches the acquisition device is configured to determine the priority such that the position information of the terminal using a wireless LAN has a higher priority **(Said terminal for which location is found immediately is located in a wireless LAN, Paragraph 9, lines 6-8 and Paragraph 28, lines 4-12)**.

Regarding claim 85, Tallman, in view of Simons, teaches the program according to claim 82. Simons further teaches the acquisition device is configured to determine the priority based on presence/absence of a response from the terminal **(A request is made to acquire the location of said portable devices that generates a record of the presence/absence of said portable device at their locations, where said record is generated immediately, Paragraph 40, Paragraph 37, lines 1-3 and Figure 5)**.

Regarding claim 86, Tallman, in view of Simons, teaches the program according to claim 82. Tallman further teaches the acquisition device is configured to determine the priority based on the use state of the terminal **(Said current location and the most recent/previously received location of local transmitters, most recent use of person corresponding to said reader, are determined, along with an identity of said person corresponding to said reader, Column 9, lines 41-52, Column 3, lines 10-15 and Figure 9)**.

14. Claims 1, 5-8, 11-13, 35, 40, 59, 63-65 and 70 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tallman, and further in view of Simons, and further in view of Franklin **(US Patent No. 7,006,768)**.

Regarding claims 1 and 59, Tallman teaches a positioning system and method for detecting the position of a terminal, comprising: an illumination device configured to transmit a signal including a unique information from a given installation position, **(Transmitters that transmit through infrared illumination are placed at fixed locations throughout said indoor area. Said transmitters transmit their unique**

locations, where said transmitter locations are received by said reader and used to determine location of said reader , where a local computer 280 external to said reader receives and stores current location of local transmitters and said identity of said reader . Said current location and the most recent/previously received location of local transmitters are displayed, along with an identity of a person corresponding to said reader , Abstract, lines 5-8, Column 1, lines 11-18, Column 9, lines 4-13, 17-20 and 41-52, Column 3, lines 10-15 and Figure 9); a terminal communicably connected to the illumination device and configured to extract the unique information from the signal transmitted from the illumination device **(Said transmitter locations are received by said reader, and said reader transmits said transmitter location and its reader identification to a local computer 280, Column 9, lines 4-13, 17-20 and 41-52)**; and a position estimation device communicably connected to the terminal and receiving the unique information from the terminal, the position estimation device being configured to estimate a position of the terminal, said illumination installation position information including the unique information **(Said local computer 280 uses said transmitter location and reader identification to determine location of said reader , Column 9, lines 4-13, 17-20 and 41-52)**; said terminal position is based on an illumination installation position information and the unique information received by the terminal, said illumination information includes a position information indicating the installation position of the illumination device in association with each other **(Said reader position is relative to said fixed/predetermined location of said transmitter that is received by said reader ,**

where, from said predetermined location, it is known where said transmitter is installed in the indoor area and location of said reader is determined as being close to said transmitter, Column 9, lines 4-13, 17-20 and 41-52), and, wherein the position estimation device is configured to: read out from the illumination installation position information the position information corresponding to the unique information based on one or more unique information extracted by the terminal and estimate the position of the terminal based on the read out position information **(Said local computer 280 determines and displays the latest transmitter location information associated with said reader from among a plurality of said fixed location transmissions received by said reader , Column 9, lines 4-13, 17-20 and 41-52)**. Tallman does not teach said position information is read out within a past predetermined time period. Simons teaches said position information is read out within a past predetermined time period **(The location of a portable device is determined, where said determination is scheduled in a predetermined manner on an hourly, daily or other basis based on a predetermined time period, Abstract, lines 1-6, Paragraph 37 and Figure 4)**. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Tallman to include these features for the benefit of added security and service variety.

Regarding claims 5-8, Tallman, in view of Simons, teaches the positioning system according to claim 1. Tallman further teaches the position estimation device is configured to estimate the position of the terminal based on the unique information

received by the terminal most recently **(Said current location and the most recent/previously received location of local transmitters are estimated, along with an identity of a person corresponding to said reader, Column 9, lines 41-52, Column 3, lines 10-15 and Figure 9)**. Simons further teaches said estimation based on most frequently received unique information among one or more unique information received by the terminal within a past predetermined time period **(A request is made to acquire locations of said portable device within the past hour, day or other basis based on a predetermined time period, and said location corresponding to said particular terminal is generated, Paragraph 40, Paragraph 37 and Figure 4)**; the position estimation device is configured to add a weighting value to one or more unique information received by the terminal within a past predetermined time based on the reception time of the respective unique information and estimate the position of the terminal based on unique information selected based on a result of the addition **(A plurality of location information events for said portable device are ordered by reception time, see Figure 4)**; and a position estimation device is configured to increase the weighting value as the reception time becomes newer, select unique information having the largest value resulting from the addition, and estimate the position of the terminal based on the selected unique information **(Said request may include a request for immediate information that gives weight to newest location event, Paragraph 40, Paragraph 37, lines 1-3 and Figures 4 and 5)**.

Regarding claims 11 and 63, Tallman, in view of Simons, teaches the limitations of claims 1 and 59, respectively. Tallman further teaches the illumination device

comprises a light emission unit for emitting an illumination light and a transmission unit for transmitting the unique information the transmission unit comprises an infrared LED for emitting an infrared ray signal, and the infrared LED is configured to transmit the unique information on the infrared ray signal **(Said transmitters transmit said locations through infrared illumination, Abstract, lines 5-8)**.

Regarding claims 12 and 64, Tallman, in view of Simons, teaches the limitations of claims 1 and 59, respectively. Tallman further teaches an illumination device comprises a light emission unit for emitting an illumination light and a transmission unit for transmitting the unique information **(Said transmitters transmit said locations through infrared illumination, Abstract, lines 5-8)**; the transmission unit comprises a wireless communication unit for transmitting a radio signal, and the wireless communication unit is configured to transmit said unique information on the radio signal **(Said transmitter utilizes radio frequency bandwidth, Column 6, lines 27-34)**.

Regarding claims 13 and 65, Tallman, in view of Simons, teaches the positioning system according to claims 1 and 59, respectively. Simons further teaches the transmission unit is configured to transmit the unique information to the terminal at random timing **(Said location information may be determined in a non-predetermined manner or in a controlled manner through said collation, Paragraph 37, lines 1-6)**.

Regarding claim 35, Tallman, in view of Simons, teaches the positioning system according to claim 1. Tallman further teaches the illumination device is configured to emit a light having a color indicating that it is transmitting the unique information **(Said transmitters transmit said locations through infrared illumination, Abstract, lines 5-8)**.

Regarding claim 40, Tallman, in view of Simons, teaches the positioning system according to claim 1. Tallman further teaches the illumination installation position information is configured to be created by associating the unique information collected by the terminal and installation position of the illumination device with each other **(Said reader position is relative to said fixed/predetermined location of said transmitter that is received by said reader , where, from said predetermined location, it is known where said transmitter is installed in the indoor area and location of said reader is determined as being close to said transmitter , Column 9, lines 4-13, 17-20 and 41-52)**.

Regarding claim 70, Tallman, in view of Simons, teaches the positioning method according to claim 59. Tallman further teaches collecting the unique information by using a terminal that can receive the unique information that the illumination device transmits **(Said transmitter locations are received by said reader, and said reader transmits said transmitter location and its reader identification to a local**

computer 280, Column 9, lines 4-13, 17-20 and 41-52); creating the illumination installation position information to be stored in a positioning system by associating the position at which the unique information is received and received unique information with each other **(Signals transmitted by said transmitters are received by said reader and used to determine location of said reader , where a local computer 280 external to said reader receives and stores current location of local transmitters and said identity of said reader , Column 9, lines 4-13 and 41-52)**.

15. Claim 66 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tallman, and further in view of Simons, and further in view of Franklin **(US Patent No. 7,006,768)**.

Regarding claim 66, Tallman, in view of Simons, teaches the positioning method according to claim 59. Tallman, in view of Simons, does not teach in the case where the light emission unit and transmission unit of the illumination device are connected to a power source unit by means of a power source interface of a fluorescent tube for a fluorescent illumination device, the light emission unit and transmission unit convert an AC power supplied from the power source interface of a fluorescent tube into a DC power. Franklin teaches in the case where the light emission unit and transmission unit of the illumination device are connected to a power source unit by means of a power source interface of a fluorescent tube for a fluorescent illumination device **(Said lamp function is contained within a Lamp and Switching Assembly 150 in Figure 3,**

where said Lamp and Switching Assembly 150 is separate from said Power Supply 102 and is connected to said Power Supply 102, and a fluorescent tube 4 is contained within Lamp and Switching Assembly 150 that maintains said connection, Column 5, lines 30-34), the light emission unit and transmission unit convert an AC power supplied from the power source interface of a fluorescent tube into a DC power **(Said Lamp and Switching Assembly 150 that contains fluorescent tube 4 incorporates said Power Supply 102, where said Power Supply 102 is a rectifier, filter, and dual-voltage power supply that contains a full-wave diode rectifier and filter that converts the incoming AC power from AC to DC power)**. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Tallman, in view of Simons to include this feature for the benefit of transmission efficiency.

16. Claims 10, 15-19, 21 and 62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tallman, in view of Simons, and further in view of Franklin, and further in view of Hirakata, et al **(US Patent No. 7,138,974)**. From now on, Hirakata, et al, will be referred to as Hirakata.

Regarding claims 10 and 62, Tallman, in view of Simons, teaches the limitations of claims 1 and 59. Tallman further teaches the illumination device comprises a light emission unit for emitting an illumination light and a transmission unit for transmitting the unique information **(Said transmitters transmit said locations through infrared**

illumination, Abstract, lines 5-8); Tallman, in view of Simons, does not teach the transmission unit comprises a LED for emitting a visible light signal; and the LED is configured to transmit the unique information on the visible light signal, where said lamp is fluorescent. Franklin teaches the transmission unit comprises a LED for emitting a visible light signal **(Different types of color may be emitted by said ballast assembly, including visible light and other colors of the spectrum, Column 4, lines 20-28)**; and the LED is configured to transmit the unique information on the visible light signal **(Said visible light contains data, where said data includes said serial number, Column 4, lines 25-31)**, where said lamp is fluorescent **(Column 4, lines 25-28)**. Hirakata teaches said visible light transmitted by said fluorescent lamp is white **(A fluorescent lamp transmits visible light that is white, Column 39, lines 27-30 and 38-45)**. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Tallman, in view of Simons, to include these features for the benefit of service variety.

Regarding claim 15, Tallman, in view of Simons, and further in view of Franklin, and further in view of Hirakata, teaches the positioning system according to claim 10. Tallman further teaches the illumination device comprises a light emission unit for emitting an illumination light **(Said transmitters transmit said locations through infrared illumination, Abstract, lines 5-8)**, a transmission unit for transmitting the unique information **(Said transmitters transmit said locations through infrared**

illumination, Abstract, lines 5-8); Franklin further teaches the illumination device comprises a power source unit **(Power Supply 102 of Figure 3)**; and each of the light emission unit and transmission unit is configured to be separable from the power source unit and is connected to the power source unit using a power source interface of a fluorescent tube for a fluorescent illumination device **(Said lamp function is contained within a Lamp and Switching Assembly 150 in Figure 3, where said Lamp and Switching Assembly 150 is separate from said Power Supply 102 and is connected to said Power Supply 102, and a fluorescent tube 4 is contained within Lamp and Switching Assembly 150 that maintains said connection, Column 5, lines 30-34)**.

Regarding claims 16-19 , Tallman, in view of Simons, and further in view of Franklin, and further in view of Hirakata, teaches the positioning system according to claim 15. Franklin further teaches each of the light emission unit and transmission unit incorporates a power conversion unit, the power conversion unit is configured to convert an AC power supplied from the power source interface of a fluorescent tube into a DC power used by the light emission unit and transmission unit, the light emission unit uses a fluorescent tube, the transmission unit incorporates the power conversion unit, the power conversion unit is configured to convert an AC power supplied from the power source interface of a fluorescent tube into a DC power used by the transmission unit **(Said Lamp and Switching Assembly 150 that contains fluorescent tube 4 incorporates said Power Supply 102, where said Power**

Supply 102 is a rectifier, filter, and dual-voltage power supply that contains a full-wave diode rectifier and filter that converts the incoming AC power from AC to DC power).

Regarding claim 21, Tallman, in view of Simons, and further in view of Franklin, and further in view of Hirakata, teaches the positioning system according to claim 18. Franklin further teaches the power conversion unit comprises a power holding circuit for holding a power required for transmission of the unique information **(Said Power Supply 102)**.

17. Claims 20, 25-27, 87 and 88 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tallman, in view of Simons, and further in view of Franklin, and further in view of Hirakata, and further in view of Steffie, et al **(US PG Publication 2004/0251884)**. From now on, Steffie, et al, will be referred to as Steffie.

Regarding claim 20, Tallman, in view of Simons, and further in view of Franklin, and further in view of Hirakata, teaches the positioning system according to claim 18. Tallman, in view of Simons, and further in view of Franklin, and further in view of Hirakata, does not teach the power conversion unit comprises an overcurrent protection circuit for protecting the power source unit of the fluorescent illumination device. Steffie teaches the power conversion unit comprises an overcurrent protection circuit for protecting the power source unit of the fluorescent illumination device **(A lamp**

comprises a fluorescent light and an overcurrent protection circuit, Paragraph 15, lines 3-8 and Paragraph 30). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Tallman, in view of Simons, and further in view of Franklin, and further in view of Hirakata, to include this feature for the benefit of cost savings.

Regarding claims 25-27, Tallman, in view of Simons, and further in view of Franklin, and further in view of Hirakata, teaches the positioning system according to claim 10. Tallman further teaches the illumination device comprises a light emission unit for emitting an illumination light, a transmission unit for transmitting the unique information **(Said transmitters transmit said locations through infrared illumination, Abstract, lines 5-8)**; Franklin further teaches the illumination device comprises a power source unit **(Power Supply 102 of Figure 3)**; the light emission unit and transmission unit incorporate a power conversion unit; the power conversion unit is configured to convert a DC power voltage supplied from the power source interface of a fluorescent light bulb into a voltage form that the light emission unit and transmission unit use **(Said Lamp and Switching Assembly 150 that contains fluorescent tube 4 incorporates said Power Supply 102, where said Power Supply 102 is a rectifier, filter, and dual-voltage power supply that contains a full-wave diode rectifier and filter that converts the incoming AC power from AC to DC power for use by said Lamp and Switching Assembly 150)**. Tallman, in view of Simons, and further in view of Franklin, and further in view of Hirakata, does not teach each of the light emission

unit and transmission unit is connected to the power conversion unit using a power source interface of an incandescent light bulb for an incandescent light bulb illumination device. Steffie teaches each of the light emission unit and transmission unit is connected to the power conversion unit using a power source interface of an incandescent light bulb for an incandescent light bulb illumination device **(A lamp comprises an incandescent lamp, Paragraph 15, lines 3-8)**. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Tallman, in view of Simons, and further in view of Franklin, and further in view of Hirakata, to include this feature for the benefit of service variety.

Regarding claim 87, Tallman, in view of Simons, and further in view of Franklin, and further in view of Hirakata, teaches the positioning system according to claim 18. Tallman, in view of Simons, and further in view of Franklin, and further in view of Hirakata, does not teach the power conversion unit comprises protection means for supplying a DC power to the transmission unit only when an electrical connection between the power conversion unit and transmission unit is established. Steffie teaches the power conversion unit comprises protection means for supplying a DC power to the transmission unit only when an electrical connection between the power conversion unit and transmission unit is established **(A lamp comprises a fluorescent light and an overcurrent protection circuit, Paragraph 15, lines 3-8 and Paragraph 30)**. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify

the invention of Tallman, in view of Simons, and further in view of Franklin, and further in view of Hirakata, to include this feature for the benefit of cost savings.

Regarding claim 88, Tallman, in view of Simons, and further in view of Franklin, and further in view of Hirakata, and further in view of Steffie, teaches the positioning system according to claim 87. Steffie further teaches the protection means comprises current detection means **(An electronic dimmer circuit that provides power to a lamp load includes a control circuit that detects and controls a voltage source that charges current being provided to said lamp load, Paragraph 33, lines 1-14)**, determination means **(Said control circuit controls the on/off operation of a switching device, Paragraph 13, lines 10-11)**, and switching means **(Said voltage source charges current through said switching device, Paragraph 13, lines 8-11)**; the current detection means is configured to detect the output current value of the power conversion unit and notifies the determination means of the detected output current value **(An electronic dimmer circuit that provides power to a lamp load includes a control circuit that detects and controls a voltage source that charges current being provided to said lamp load, Paragraph 33, lines 1-14)**; and the determination means is configured to compare the notified output current value and a previously set threshold value; and in the case where the output current value is larger than the threshold value, output of a DC power is stopped by the switching means, while in the case where the output current value is smaller than the threshold value, a DC power is output by the switching means **(Said control circuit controls on/off**

operation of switching device through a switching threshold, where said switching device is turned on when said voltage of the voltage source is below a predetermined threshold and is turned off when said voltage of the voltage source is above a predetermined threshold, Paragraph 13, lines 8-14).

18. Claims 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tallman, in view of Simons, and further in view of Franklin, and further in view of Hirakata, and further in view of Mollema, et al **(US PG Publication 2003/0155869)**, and further in view of Baarman **(US Patent No. 6,731,071)**. From now on, Mollema, et al, will be referred to as Mollema.

Regarding claims 22, Tallman, in view of Simons, and further in view of Franklin, and further in view of Hirakata, teaches the positioning system according to claim 18. Tallman, in view of Simons, and further in view of Franklin, and further in view of Hirakata, does not teach two electrode terminals, which are the power source interface of a fluorescent tube, formed at one side of the fluorescent tube and power input terminals, which are connected to the power conversion unit for supplying a power to the transmission unit, are electrically connected in parallel to each other. Mollema, together with Baarman, teaches two electrode terminals, which are the power source interface of a fluorescent tube, formed at one side of the fluorescent tube and power input terminals, which are connected to the power conversion unit for supplying a power

to the transmission unit, are electrically connected in parallel to each other **(In US PG Publication 2003/0155869, a lamp assembly is used in a RFID communication system, Paragraph 21 and Paragraph 24, lines 1-6 and Figure 3. Said lamp assembly of Mollema is incorporated by reference in US Patent No. 6731071 of Baarman, where Figure 10 includes 2 electrodes, 436a and 436b as the power source interface of a fluorescent light 410, and said electrodes 436a and 436b are connected in parallel to each other, one on either side, within said fluorescent light 410, Column 10, lines 25-27 and 42-43)**. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Tallman, in view of Simons, and further in view of Franklin, and further in view of Hirakata, to include this feature for the benefit of added security.

19. Claims 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tallman, in view of Simons, and further in view of Franklin, and further in view of Hirakata, and further in view of Mollema, and further in view of Baarman, and further in view of Fukushima, et al **(US Patent No. 6,756,723)**. From now on, Fukushima, et al, will be referred to as Fukushima.

Regarding claims 23 and 24, Tallman, in view of Simons, and further in view of Franklin, and further in view of Hirakata, and further in view of Mollema, and further in view of Baarman, teaches the positioning system according to claim 22. Franklin further teaches the fluorescent tube is a straight fluorescent tube having two electrode

terminals respectively on both sides thereof **(Figure 10 includes 2 electrodes, 436a and 436b as the power source interface of a straight-tubed fluorescent light 410, and said electrodes 436a and 436b are connected in parallel to each other, one on either side, within said fluorescent light 410, Column 10, lines 25-27 and 42-43)**; the straight fluorescent tube further comprises a power acquisition unit which is connected in parallel to the two electrode terminals formed at one side thereof and acquires a power to be supplied to the power conversion unit **(Fig. 10 shows power acquisition units through which said electrodes 436a and 436b are inserted and from which said electrodes acquire their power, Column 10, lines 25-43)**; Tallman, in view of Simons, and further in view of Franklin, and further in view of Hirakata, and further in view of Mollema, and further in view of Baarman, does not teach the power acquisition unit is formed into a plate having two holes through which the two electrode terminals are inserted. Fukushima teaches the power acquisition unit is formed into a plate having two holes through which the two electrode terminals are inserted **(In Fig. 6, lead wires 3a and 3b that energize electrodes are inserted through a plate 5 in a fluorescent tube 1, Column 5, lines 18-27, Column 7, lines 57-61 and Column 8, lines 3-7)**; and the power acquisition unit has a thickness of 1.0 mm or less **(Said plate 5 has a thickness of 1.0 mm, Column 8, lines 10-13)**. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Tallman, in view of Simons, and further in view of Franklin, and further in view of Hirakata, and further in view of Mollema, and further in view of Baarman, to include the feature of the plate with two holes through which the two electrode terminals are

inserted feature for the benefit of added security. Tallman, in view of Simons, and further in view of Franklin, and further in view of Hirakata, and further in view of Mollema, and further in view of Baarman, and further in view of Fukushima, does not teach the thickness being 1.3 mm or less. However, as stated in the specification on Pg. 6, Paragraph 17, lines 14-15, **"Preferably the power acquisition unit has a thickness of 1.3 mm or less"**. Claim 24 merely repeats this statement. Since no mention is made that said thickness of 1.3 mm or less solves any stated problem or is for any particular purpose, it would have been an obvious matter of design choice to include this feature, since the applicant has not disclosed that incorporating a power acquisition unit with a thickness of 1.3 mm or less solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well without the difference.

20. Claims 89 and 90 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tallman, in view of Simons, and further in view of Franklin, and further in view of Hirakata, and further in view of Fukushima.

Regarding claims 89 and 90, Tallman, in view of Simons, and further in view of Franklin, and further in view of Hirakata, teaches the positioning system according to claim 18. Tallman, in view of Simons, and further in view of Franklin, and further in view of Hirakata, does not teach the power conversion unit and transmission unit are connected by a connection interface, the connection interface comprising insulating

means configured to prevent an electrical contact from outside at connection time, and the connection interface is an electrode covered by an insulating body. Fukushima teaches the power conversion unit and transmission unit are connected by a connection interface, the connection interface comprising insulating means configured to prevent an electrical contact from outside at connection time, and the connection interface is an electrode covered by an insulating body **(In Fig. 6, lead wires 3a and 3b that energize electrodes are inserted through an insulating plate 5 in a fluorescent tube 1 configured to prevent an electrical contact from outside at connection time, Column 5, lines 18-27, Column 7, lines 57-61 and Column 8, lines 3-7)**. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Tallman, in view of Simons, and further in view of Franklin, and further in view of Hirakata, to include this feature for the benefit of added security.

21. Claims 36 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tallman, in view of Simons, and further in view of Barber, et al **(US Patent No. 7,212,112)**. From now on, Barber, et al, will be referred to as Barber.

Regarding claims 36 and 37, Tallman, in view of Simons, teaches the positioning system according to claim 1. Tallman, in view of Simons, does not teach the illumination device is configured to emit a light using different colors for each service type. Barber teaches the illumination device is configured to emit a light using different colors for indicating the occurrence of different events **(In a locationing system**

involving light control, a control device comprising a controller 36 that emits light and senses when different events occur by communicating with communication circuitry 160 that may be a RFID. Said control device emits a light with a color that indicates a first state. When said control device receives a signal from said communication circuitry that indicates a change in said first state, said control device emits a light with a color different from said first color to indicate said second state, Column 42, lines 5-17, Column 9, lines 12-22, Column 2, lines 6-14 and Figure 8). Barber does not teach the different colors for service types or for service providers specifically. However, since it is notoriously well-known to use different colors to represent different events (for example, red/stop, yellow/emergency, green/go), it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Tallman, in view of Simons, to include this feature for the benefit of efficiency.

Regarding claim 38, Tallman, in view of Simons, and further in view of Barber, teaches the positioning system according to claim 36. Tallman, further teaches the illumination device is configured to illuminate the area within which the terminal can receive the unique information with an illumination light **(Said transmitters illuminate said indoor area through said infrared illumination, Abstract, lines 5-8)**.

22. Claims 41-45 and 71-74, 93 and 97-98 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tallman, in view of Simons, and further in view of Irvin **(US Patent No. 6,768,909)**.

Regarding claims 41-45 and 71-74, Tallman, in view of Simons, teaches the positioning system according to claim 1 and the positioning method according to claim 59, respectively. Simons further teaches second positioning system is a positioning system using a wireless LAN **(Said indoor network includes wireless LAN, Paragraph 9, lines 6-8 and Paragraph 28, lines 4-12)**. Tallman, in view of Simons, does not teach the positioning system further comprises a second positioning system; and the positioning system and second positioning system can be operated in a switchable manner; the positioning system is configured to identify the position of the terminal by using the unique information that the illumination device transmits, in the case where requested terminal position information is logical position information; the positioning system is configured to identify the position of the terminal by using the second positioning system, in the case where the positioning system could not identify the position of the terminal by using the unique information; the positioning system is configured to determine whether to identify the position of the terminal by using the unique information or by using the second positioning system, based on the type of the requested terminal position information. Irvin teaches the positioning system further comprises a second positioning system **(A mobile station comprises an internal and external positioning system, where said internal positioning system works**

indoors, and said external positioning system works outdoors, Column 3, lines 35-40) and the positioning system and second positioning system can be operated in a switchable manner **(Said internal positioning method is employed whenever said external positioning method is not used and vice-versa, Abstract, lines 6-20)**; the positioning system is configured to identify the position of the terminal by using the unique information that the illumination device transmits, in the case where requested terminal position information is logical position information **(Said internal/indoor positioning method is employed whenever said external/outdoor positioning method is not used and vice-versa, Abstract, lines 6-20)**; the positioning system is configured to identify the position of the terminal by using the second positioning system, in the case where the positioning system could not identify the position of the terminal by using the unique information **(Said external/outdoor positioning method is employed whenever said internal/indoor positioning method is not used, Abstract, lines 6-20)**; the positioning system is configured to determine whether to identify the position of the terminal by using the unique information or by using the second positioning system, based on the type of the requested terminal position information **(Said internal/indoor positioning method is employed whenever said external/outdoor positioning method is not used and vice-versa, Abstract, lines 6-20)**. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Tallman, in view of Simons, to include this feature for the benefit of service variety and added security.

Regarding claims 93 and 98, Tallman, in view of Simons, teaches the positioning system according to claim 92. Tallman, in view of Simons, does not teach the information transmission means utilizes a PHS, and the second positioning system is configured to identify the position of a PHS base station with which the terminal communicate, as the position of the terminal. Irvin teaches the information transmission means utilizes an external/outside/second positioning system **(A mobile station comprises an internal and external positioning system, where said internal positioning system works indoors, and said external positioning system works outdoors, Column 3, lines 35-40)**, and the second positioning system is configured to identify the position of said external//outside/second base station with which the terminal communicates, as the position of the terminal **(Said internal/indoor positioning method is employed whenever said external/outdoor positioning method is not used and vice-versa, Abstract, lines 6-20)**. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Tallman, in view of Simons, to include this feature for the benefit of service variety and added security.

Regarding claim 97, Tallman, in view of Simons, teaches the positioning system according to claim 91. Tallman, in view of Simons, does not teach the positioning system is configured to be switched to a second positioning system. Irvin teaches the positioning system is configured to be switched to a second positioning system **(A mobile station comprises an internal and external positioning system, where said**

internal positioning system works indoors, and said external positioning system works outdoors, where said internal positioning method is employed whenever said external positioning method is not used and vice-versa, Column 3, lines 35-40 and Abstract, lines 6-20). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Tallman, in view of Simons, to include this feature for the benefit of service variety and added security.

23. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tallman, in view of Simons, and further in view of Franklin, and further in view of Hirakata, and further in view of Zhang, et al **(US Patent No. 6,528,782)**. From now on, Zhang, et al, will be referred to as Zhang.

Regarding claim 30, Tallman, in view of Simons, and further in view of Franklin, and further in view of Hirakata, teaches the positioning system according to claim 10. Tallman further teaches the illumination device comprises a light emission unit for emitting an illumination light and a transmission unit for transmitting the unique information **(Said transmitters transmit said locations through infrared illumination, Abstract, lines 5-8)**, Franklin further teaches the illumination device comprises a power source unit **(Power Supply 102 of Figure 3)**. Tallman, in view of Simons, and further in view of Franklin, and further in view of Hirakata, does not teach a solar battery unit, and a rechargeable battery for storing a power supplied from the solar battery unit; and the transmission unit is configured to transmit the unique information

by using a power supplied from the solar battery unit and to transmit the unique information when a power required for the transmission of the information has been stored in the rechargeable battery; the illumination device comprises a rechargeable battery and is configured to transmit information by using a power supply from the rechargeable battery in the case where it cannot use a power source thereof. Zhang teaches a solar battery unit, and a rechargeable battery for storing a power supplied from the solar battery unit; and the transmission unit is configured to transmit the unique information by using a power supplied from the solar battery unit and to transmit the unique information when a power required for the transmission of the information has been stored in the rechargeable battery and the illumination device comprises a rechargeable battery and is configured to transmit information by using a power supply from the rechargeable battery in the case where it cannot use a power source thereof **(A fluorescent lamp comprises a solar battery 360 and a rechargeable battery 361 for storing power supplied from the solar battery unit; and the transmission unit is configured to transmit the unique information by using a power supplied from the solar battery unit and to transmit the unique information when a power required for the transmission of the information has been stored in the rechargeable battery and the illumination device comprises a rechargeable battery and is configured to transmit information by using a power supply from the rechargeable battery in the case where it cannot use a power source thereof, Column 6, lines 25-27, Column 26, lines 52-54 and 59-61 and Figure 3)**. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify

the invention of Tallman, in view of Simons, and further in view of Franklin, and further in view of Hirakata, to include this feature for the benefit of added security and transmission efficiency.

24. Claim 52 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tallman, in view of Simons, and further in view of Zhang.

Regarding claim 52, Tallman, in view of Simons, teaches the positioning system according to claim 1. Tallman, in view of Simons, does not teach the illumination device comprises a rechargeable battery and is configured to transmit information by using a power supply from the rechargeable battery in the case where it cannot use a power source thereof. Zhang teaches the illumination device comprises a rechargeable battery and is configured to transmit information by using a power supply from the rechargeable battery in the case where it cannot use a power source thereof **(A fluorescent lamp comprises a solar battery 360 and a rechargeable battery 361 for storing power supplied from the solar battery unit; and the transmission unit is configured to transmit the unique information by using a power supplied from the solar battery unit and to transmit the unique information when a power required for the transmission of the information has been stored in the rechargeable battery and the illumination device comprises a rechargeable battery and is configured to transmit information by using a power supply from the rechargeable battery in the case where it cannot use a power source thereof,**

Column 6, lines 25-27, Column 26, lines 52-54 and 59-61 and Figure 3). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Tallman, in view of Simons, to include this feature for the benefit of added security and transmission efficiency.

25. Claims 31-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tallman, in view of Simons, and further in view of Franklin, and further in view of Hirakata, and further in view of Gong, et al **(US PG Publication 2005/0032531)**, and further in view of Fiset **(US Patent No. 6,861,658)**, and further in view of Cabrera **(US PG Publication 2004/0101312)**. From now on, Gong, et al, will be referred to as Gong.

Regarding claims 31-34, Tallman, in view of Simons, and further in view of Franklin, and further in view of Hirakata, teaches the positioning system according to claim 10. Franklin further teaches the illumination device comprises a light emission unit for emitting an illumination light and a transmission unit for transmitting the unique information **(Fig. 3 represents a ballast assembly that emits lamp/light output, where said light contains data and said data includes said serial number, Column 4, lines 20-31)**, and a power source unit **(Power Supply 102 of Figure 3)**; Tallman, in view of Simons, and further in view of Franklin, and further in view of Hirakata, does not teach the transmission unit is configured to determine an angle at which the unique information is transmitted depending on the size of the area within which the unique

information can be received and installation level of the illumination device; and the transmission unit is configured to determine the number and output power of LED's constituting the transmission unit that transmits the unique information depending on the size of the area within which the unique information can be received, installation level of the illumination device, gain characteristics of a receiver of the terminal for receiving the unique information, and output characteristics of the LED's constituting the transmission unit that transmits the unique information; the transmission unit comprises a plurality of LED's for emitting a light signal, the LED's being configured to transmit the unique information on the light signal in different directions; the transmission unit is configured to determine the number of LED's that transmit the unique information depending on a difference in the transmission direction between the adjacent two LED's, transmission angles of LED's, size of the area within which the unique information can be received, and installation level of the illumination device. Gong teaches the transmission unit is configured to determine an angle at which the unique information is transmitted depending on the size of the area within which the unique information can be received and installation level of the illumination device and the transmission unit is configured to determine the number and output power of the illumination device constituting the transmission unit that transmits the unique information depending on gain characteristics of a receiver of the terminal for receiving the unique information **(In an indoor locationing system, a wireless terminal is located based on illumination transmitted from an Access Point to said wireless terminal, where said Access Point determines the angle of transmission needed from said Access Point to**

said wireless terminal based on the size of the area within which said illumination can be received, expected user density and the level of location resolution desired, indicating the installation level of said Access Point is considered in said indoor locationing system. In addition, a best matching antenna gain difference set may be utilized to identify an azimuth angle for the direction of the remote station from the AP, Paragraph 11, lines 1-12, Paragraph 13, lines 1-4, Paragraph 31, lines 8-12, Paragraph 43, lines 4-12, Paragraph 51, lines 8-12, step 305 in Figure 3 and Figure 2A); Fiset teaches the transmission unit is configured to determine the number and output power of LED's constituting the transmission unit that transmits the unique information depending on the size of the area within which the unique information can be received, installation level of the illumination device, and output characteristics of the LED's constituting the transmission unit that transmits the unique information **(An indoor LED communications system comprises a LED transmission device, where a wireless device is identified through radio frequency by said LED transmission device, where said LED transmission device selectively turns on/off a number of said LED's and determines an output power being transmitted by said LED communications system that depends on said number of LED's and installation level of said LED transmission device, and said LED transmission device comprises adjustable LED's that determine on which specific areas to transmit light when said light transmission must be focused on specific areas, Column 10, lines29-40, Column 9, lines 31-34 and 39-46, Column 7, lines 27-40, Column 9, lines 65-67, Column 10, lines 1-9 and 60-67, Column 5, lines**

56-59, Column 6, lines 5-10, Column 7, lines 66-67 and Column 8, lines 1-2); the transmission unit is configured to determine the number and output power of LED's constituting the transmission unit that transmits the unique information depending on the size of the area with which the unique information can be received, the installation level of the illumination device and output characteristics of the LED's constituting the transmission unit that transmits the unique information **(An indoor LED communications system comprises a LED transmission device, where a wireless device is identified through radio frequency by said LED transmission device, where said LED transmission device selectively turns on/off a number of said LED's and determines an output power being transmitted by said LED communications system that depends on said number of LED's and installation level of said LED transmission device, and said LED transmission device comprises adjustable LED's that determine on which specific areas to transmit light when said light transmission must be focused on specific areas, Column 10, lines29-40, Column 9, lines 31-34 and 39-46, Column 7, lines 27-40, Column 9, lines 65-67, Column 10, lines 1-9 and 60-67, Column 5, lines 56-59, Column 6, lines 5-10, Column 7, lines 66-67 and Column 8, lines 1-2)**; the transmission unit is configured to determine the number and output power of LED's constituting the transmission unit that transmits the unique information depending on a difference in the transmission direction between the adjacent two LED's, transmission angles of LED's, the size of the area with which the unique information can be received and the installation level of the illumination device **(An indoor LED communications system**

comprises a LED transmission device, where a wireless device is identified through radio frequency by said LED transmission device, where said LED transmission device selectively turns on/off a number of said LED's and determines an output power being transmitted by said LED communications system that depends on said number of LED's and installation level of said LED transmission device, said LED transmission device comprises adjustable LED's that determine on which specific areas to transmit light when said light transmission must be focused on specific areas, and the LED's are placed on a multiple angled circuit board and bent to allow for angular transmission in at different angles, Column 10, lines29-40, Column 9, lines 31-34 and 39-46, Column 7, lines 27-40, Column 9, lines 65-67, Column 10, lines 1-9 and 60-67, Column 5, lines 56-59, Column 6, lines 5-10, Column 7, lines 66-67 and Column 8, lines 1-2 and 52-60); the transmission unit comprises a plurality of LED's for emitting a light signal **(Said selective turning on/off of LED's indicates a plurality of LED's, Column 9, lines 65-67)**, the LED's being configured to transmit the unique information on the light signal in different directions **(Said LED's transmit illumination information in different directions in an adjustable manner, Column 7, lines 66-67 and Column 8, lines 1-2)**; Cabrera teaches the transmission unit is configured to determine the number and output power of LED's constituting the transmission unit that transmits the unique information depending on gain characteristics of a receiver of the terminal for receiving the unique information **(In an indoor lighting system, the illumination intensity transmitted by a ballast is modulated in accordance with**

data to be transmitted to a user of an optical receiver/tag, Paragraph 75, lines 1-14). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Tallman, in view of Simons, and further in view of Franklin, and further in view of Hirakata, to include these features for the benefit of transmission efficiency.

26. Claims 68 and 69 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tallman, in view of Simons, and further in view of Franklin, and further in view of Gong, and further in view of Fiset, and further in view of Cabrera.

Regarding claims 68 and 69, Tallman, in view of Simons, teaches the positioning method according claim 59. Tallman, in view of Simons, does not teach determining an angle at which the unique information is transmitted from the illumination device depending on the size of the area within which the unique information can be received and installation level of the illumination device; and determining, in the case where a plurality of LED's are arranged in the illumination device so as to emit the unique information in different directions, the number of LED's that transmit the unique information depending on a difference in the transmission direction between the adjacent two LED's, transmission angles of LED's, size of the area within which the unique information can be received, and installation level of the illumination device. Gong teaches determining an angle at which the unique information is transmitted from the illumination device depending on the size of the area within which the unique

information can be received and installation level of the illumination device **(In an indoor locationing system, a wireless terminal is located based on illumination transmitted from an Access Point to said wireless terminal, where said Access Point determines the angle of transmission needed from said Access Point to said wireless terminal based on the size of the area within which said illumination can be received, expected user density and the level of location resolution desired, indicating the installation level of said Access Point is considered in said indoor locationing system. In addition, a best matching antenna gain difference set may be utilized to identify an azimuth angle for the direction of the remote station from the AP, Paragraph 11, lines 1-12, Paragraph 13, lines 1-4, Paragraph 31, lines 8-12, Paragraph 43, lines 4-12, Paragraph 51, lines 8-12, step 305 in Figure 3 and Figure 2A)**. Fiset teaches determining, in the case where a plurality of LED's are arranged in the illumination device so as to emit the unique information in different directions, the number of LED's that transmit the unique information depending on a difference in the transmission direction between the adjacent two LED's, transmission angles of LED's, size of the area within which the unique information can be received, and installation level of the illumination device **(An indoor LED communications system comprises a LED transmission device, where a wireless device is identified through radio frequency by said LED transmission device, where said LED transmission device selectively turns on/off a number of said LED's and determines an output power being transmitted by said LED communications system that depends on said number of LED's and installation**

level of said LED transmission device, said LED transmission device comprises adjustable LED's that determine on which specific areas to transmit light when said light transmission must be focused on specific areas, and the LED's are placed on a multiple angled circuit board and bent to allow for angular transmission in at different angles, Column 10, lines29-40, Column 9, lines 31-34 and 39-46, Column 7, lines 27-40, Column 9, lines 65-67, Column 10, lines 1-9 and 60-67, Column 5, lines 56-59, Column 6, lines 5-10, Column 7, lines 66-67 and Column 8, lines 1-2 and 52-60); the transmission unit comprises a plurality of LED's for emitting a light signal **(Said selective turning on/off of LED's indicates a plurality of LED's, Column 9, lines 65-67)**, the LED's being configured to transmit the unique information on the light signal in different directions **(Said LED's transmit illumination information in different directions in an adjustable manner, Column 7, lines 66-67 and Column 8, lines 1-2)**. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Tallman, in view of Simons, to include this feature for the benefit of transmission efficiency.

27. Claims 47-49, 51 and 54-58, are rejected under 35 U.S.C. 103(a) as being unpatentable over Tallman, in view of Simons, and further in view of Dowling, et al **(US Patent No. 7,309,965)**. From now on, Dowling, et al, will be referred to as Dowling.

Regarding claims 47-49, 51 and 54-58, Tallman, in view of Simons, teaches the positioning system according to claim 1. Tallman further teaches the positioning system is configured to display acquired terminal position information and to reacquire terminal position information depending on the accuracy of acquired terminal position information **(While indoors, said location of said reader is continually updated to ensure accuracy. Said transmitters are placed at fixed locations throughout said indoor area. Signals transmitted by said transmitters are received by said reader and used to determine location of said reader. The current location and the most recent/previously received location of local transmitters are displayed, along with an identity of a person corresponding to said reader , Column 9, lines 4-13, 17-20 and 41-52 and Figure 9)**; the positioning system has a function of storing attribute information concerning the terminal and of displaying the position information of the terminal corresponding to specified attribute information **(Said identity of person carrying said reader is correlated with a unique identifier of said reader and said identity of person carrying said reader along with said location of reader is displayed, Column 9, lines 4-10 and 41-52)**; and the priority is configured to determined based on the use state of the terminal **(Said current location and the most recent/previously received location of local transmitters , most recent use of person corresponding to said reader , are determined, along with an identity of said person corresponding to said reader , Column 9, lines 41-52, Column 3, lines 10-15 and Figure 9)**; Simons further teaches the positioning system is configured to store, as the attribute information of the terminal, a name **(A location identifier and an**

identifier of said portable device/terminal are stored and additional text information desired in association with said location and terminal identifiers, including store names, Paragraphs 38 and 41); the positioning system is configured to: identify a user terminal in response to a position information request concerning a user of the terminal, acquire the position information of the identified terminal and select one terminal in order of priority set for the respective terminals to acquire the position information thereof, in the case where a plurality of the user terminals exist, and said selection is based on priority and said priority is configured to be determined based on the type of the terminal **(A request is made for said location information for a particular portable device when a plurality of said portable devices exist, and said location corresponding to said particular terminal is generated immediately, Paragraph 40, Paragraph 37, lines 1-3 and Figures 4 and 5)** and display on the display device the position information of the terminal corresponding to a specified attribute information **(See Figures 4 and 5)**; the priority is configured to be determined such that the position information of the terminal using a wireless LAN has a higher priority **(Said terminal for which location is found immediately is located in a wireless LAN, Paragraph 9, lines 6-8 and Paragraph 28, lines 4-12)**; the priority is configured to be determined based on presence/absence of a response from the terminal **(A request is made to acquire the location of said portable devices that generates a record of the presence/absence of said portable device at their locations, where said record is generated immediately, Paragraph 40, Paragraph 37, lines 1-3 and Figure 5)**; Tallman further teaches tracking a user in a department

(Personnel corresponding to said readers may be tracked, Column 3, lines 3-7). Tallman, in view of Simons, does not teach the positioning system is configured to display the terminal position information corresponding to a specified display condition and to specify, as the display condition, information of floors in which the terminal exists. Dowling teaches the positioning system is configured to display the terminal position information corresponding to a specified display condition and to specify, as the display condition, information of floors in which the terminal exists **(Floors on which a terminal exists are displayed, Column 8, lines 43-50, Column 23, lines 43-57 and Figure 9)**; It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Tallman, in view of Simons, to include these features for the benefit of good customer service, service variety and security.

28. Claim 67 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tallman, in view of Simons, and further in view of Franklin, and further in view of Steffie.

Regarding claim 67, Tallman, in view of Simons, teaches the positioning method according to claim 59. Tallman, in view of Simons, does not teach in the case where the light emission unit and transmission unit of the illumination device are connected to a power source unit by means of a power source interface of an fluorescent light bulb for an fluorescent light bulb illumination device, the light emission unit and transmission unit convert a DC power voltage supplied from the power source interface of an fluorescent light bulb into a voltage form that they can use. Franklin teaches in the case

where the light emission unit and transmission unit of the illumination device are connected to a power source unit by means of a power source interface of an fluorescent light bulb for an fluorescent light bulb illumination device, the light emission unit and transmission unit convert a DC power voltage supplied from the power source interface of an fluorescent light bulb into a voltage form that they can use **(Said Lamp and Switching Assembly 150 that contains fluorescent tube 4 incorporates said Power Supply 102, where said Power Supply 102 is a rectifier, filter, and dual-voltage power supply that contains a full-wave diode rectifier and filter that converts the incoming AC power from AC to DC power for use by said Lamp and Switching Assembly 150)**. Steffie teaches each of the light emission unit and transmission unit is connected to the power conversion unit using a power source interface of an incandescent light bulb for an incandescent light bulb illumination device **(A gas discharge lamp comprises an incandescent lamp, Paragraph 15, lines 3-8)**. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Tallman, in view of Simons, to include this feature for the benefit of service variety.

29. Claims 91-92, 94-96 and 99-110 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tallman, in view of Simons, and further in view of Sweatte **(US Patent 7,109,869)**.

Regarding claim 91-92, 94-96 and 99-102, Tallman, in view of Simons, and further in view of Franklin, teaches the positioning system according to claim 1. Tallman further teaches the terminal comprises: signal reception means configured to receive the unique information transmitted from the illumination device **(Said transmitter locations are received by said reader , and said reader transmits said transmitter location and its reader identification to a local computer 280, Column 9, lines 4-13, 17-20 and 41-52)**; the terminal is carried by a person entering a specified area **(Said person carrying said reader enters said indoor environment, Column 9, lines 11-13)**; and the positioning system comprises: entering person information management means configured to manage information concerning the person who has entered the specified area **(Said identity of person carrying said reader is correlated with a unique identifier of said reader and said identity of person carrying said reader along with said location of reader is managed, Column 9, lines 4-10 and 41-52)**; a plurality of the illumination devices installed near the specified area and entering/leaving person detection means configured to detect the person who has entered/left the specified area and remainder identification means configured to identify a person who remains in the specified area **(Said location of said reader is continually updated as person carrying said reader moves throughout said indoor area, where said fixed/predetermined positions of said transmitters are place in specific areas to be monitored throughout said indoor area, and direction in which said person is moving may thus be tracked, Abstract, lines 5-8, Column 9, lines 4-13, 17-20 and 41-52, Column 6, lines 21-25 and Figure 9)**; the leaving

person detection means configured to detect, as a leaving person, the person carrying the terminal that has received the unique information transmitted from the illumination device installed outside the specified area **(Said monitored areas monitored by said fixed transmitters are placed as needed and may define areas outside what is defined as the specified area, Abstract, lines 5-8, Column 6, lines 21-25 and Figure 9)**; the terminal receives the unique information transmitted from the illumination device **(Said transmitter locations are received by said reader , and said reader transmits said transmitter location and its reader identification to a local computer 280, Column 9, lines 4-13, 17-20 and 41-52)**; the terminal comprises information transmission means configured to transmit the received unique information and terminal identification information on a radio signal, wherein the position of the terminal is identified based on the unique information and terminal identification information transmitted from the terminal **(Said reader transmits a watchdog signal over a radio frequency, where, from said watchdog signal, said reader is identified along with location of said transmitter, and location of said reader is determined as being close to said transmitter, Column 6, lines 39-44, Column 9, lines 4-13, 17-20 and 41-52)**; a storage means set outside the terminal and configured to store the unique information and terminal identification information **(Said local computer 280 external to said reader receives and stores current location of local transmitters and said identity of said reader, Column 9, lines 4-13, 17-20 and 41-52)**; and moving direction detection means configured to estimate/detect the moving direction of the person carrying the terminal from the stored unique information and

terminal identification information **(Said location of said reader is continually updated as person carrying said reader moves throughout said indoor area, where said fixed/predetermined positions of said transmitters are place in specific areas to be monitored throughout said indoor area, and direction in which said person is moving may thus be tracked, Abstract, lines 5-8, Column 9, lines 4-13, 17-20 and 41-52, Column 6, lines 21-25 and Figure 9)**; the moving direction detection means is configured to: refer to a change of the unique information transmitted from the specified terminal stored by using the storage means **(Said local computer 280 refers to previously stored information and said current location and the most recent/previously received location of local transmitters are displayed, along with an identity of a person corresponding to said reader, Column 9, lines 4-13, 17-20 and 41-52)**; the terminal and storage means are configured to communicate with each other using the information transmission means **(Said reader communicates with said local computer 280 through said watchdog signal, Column 6, lines 39-44)**. Simons further teaches entering/leaving person information management means configured to manage information concerning the person who has entered/left the specified area **(Identifying information for portable device and Access Points used by a particular user in addition to locations visited are managed and any other additional text information desired in association with said location and identifiers, including store names, Paragraphs 38 and 41 and Figure 5),** wherein the remainder identification means is configured to: compare entering person information managed by the entering person management

means and leaving person information managed by the leaving person information management means; identify a person who has entered the specified area but has not left the specified area as a remainder and identify the position of the terminal carried by the remainder **(Said managed information generates a list of activity at any given point in time, including the latest information about presence/absence of persons corresponding to said portable devices, and conclusions about the direction in which specific persons are headed and in turn whether or not they are entering/leaving stores/locations is made from said managed information, see Figure 4)**; Tallman, in view of Simons, does not teach the entering person detection means comprises: a reading device configured to: store information for the person to identify him or herself; and read out the information from a second terminal carried by a different person; the second terminal is a non-contact IC card, and the reading device is a card reader; an entrance/exit permission device which allows the person to enter/leave the specified area in the case where readout of the information succeeds or a request from the outside is received, wherein the entering/leaving person information management device is storage device configured to store the information of the person allowed to enter/leave the specified area; and the case where the exit permission device allows the person to leave the specified area in response to a request made from outside irrespective of success or failure of the readout of the information. Sweatte teaches the entering person detection means comprises: a reading device configured to: store information for the person to identify him or herself; and read out the information from a second terminal carried by a different person; the second terminal is

a non-contact IC card, and the reading device is a card reader; an entrance/exit permission device which allows the person to enter/leave the specified area in the case where readout of the information succeeds or a request from the outside is received, wherein the entering/leaving person information management device is storage device configured to store the information of the person allowed to enter/leave the specified area; and the case where the exit permission device allows the person to leave the specified area in response to a request made from outside irrespective of success or failure of the readout of the information **(While at an airport, a plurality of persons carrying cards that are non-contact cards are tracked, where said plurality of persons are allowed to enter or leave only specific areas within said airport upon successful authentication of said cards, the id of said persons are stored to check for authorization/allowed entry/exit, and, when necessary, law enforcement officials may make a request at any time for said person to go to a certain area, Abstract, lines 1-5 and 9-17 and Column 3, lines 13-33)**. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Tallman, in view of Simons, and further in view of Franklin, to include these features for the benefit of service variety and added security.

Regarding claims 103-110, Tallman, in view of Simons, teaches the positioning system according to claim 1. Tallman further teaches the transmission unit is installed to a fixing body such that the direction in which the transmission power of the transmission unit becomes maximum is downward; a receiver of the unique information

that the terminal has is attached to a moving body such that the direction in which the reception gain of the receiver becomes maximum is upward; the transmission unit is installed to a fixing body such that the direction in which the transmission power of the transmission unit becomes maximum is horizontal; the receiver is attached to a moving body such that the direction in which the reception gain of the receiver becomes maximum is horizontal; two receivers are attached to two different moving bodies; the two receivers are attached to said moving bodies such that the direction in which the reception gains of the receivers become maximum is right and left, respectively **(A plurality of said readers are tracked, where said reader is equipped with an amplifier 244 to amplify received signals and account for any direction in which said person carrying said reader is moving, Column 1, lines 11-18, Column 6, lines 49-54 and Figs 11 and 15)**; the positioning system is configured to determine entering/leaving of the moving body into/from a specified zone based on the unique information received by the receiver; the positioning system is configured to determine the direction of the moving body based on the unique information received by the receiver **(Said location of said reader is continually updated as person carrying said reader moves throughout said indoor area, where said fixed/predetermined positions of said transmitters are place in specific areas to be monitored throughout said indoor area, and direction in which said person is moving may thus be tracked, Abstract, lines 5-8, Column 9, lines 4-13, 17-20 and 41-52, Column 6, lines 21-25 and Figure 9)**.

Response to Arguments

30. Applicant's arguments, filed 10/16/09, with respect to the rejection(s) of claim(s) 1,5-8,10-13,15-27,30-38,40-45,47-49,51,52,54-59,62-74,78,79 and 82-110 under 35 USC 103 (a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Tallman, in view of Simons, and further in view of Franklin, and further in view of Hirakata, and further in view of Steffie, and further in view of Mollema, and further in view of Baarman, and further in view of Fukushima, and further in view of Barber, and further in view of Irvin, and further in view of Zhang, and further in view of Gong, and further in view of Fiset, and further in view of Cabrera, and further in view of Sweatte, and further in view of Dowling.

31. Any inquiry concerning this communication or earlier communications from the examiner should be directed to FRANK DONADO whose telephone number is (571) 270-5361. The examiner can normally be reached Monday-Friday, 9:30 am-6 pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rafael Perez-Gutierrez can be reached on 571-272-7915. The fax phone number for the organization where this application or proceeding is assigned is 571-270-6361.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-273-8300.

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